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Sugimoto

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[54] **CANTILEVER BRAKE DEVICE**

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[52] **U.S. Cl.** ..... **188/24.21**; 188/24.19; 188/2 P

[58] **Field of Search** ..... 188/24.11, 24.12, 188/24.19, 24.21, 2 P

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Attorney, Agent, or Firm—James A. Deland

[57] **ABSTRACT**

A brake link for a cantilever device includes a basal end structured for rotatably supporting the brake link on a bicycle, an intermediate section structured for supporting a brake shoe, and a distal end. An anchor member is structured for attaching a cable thereto, and the distal end of the brake link is structured for detachably and nonrotatably engaging the anchor member.

25 Claims, 8 Drawing Sheets

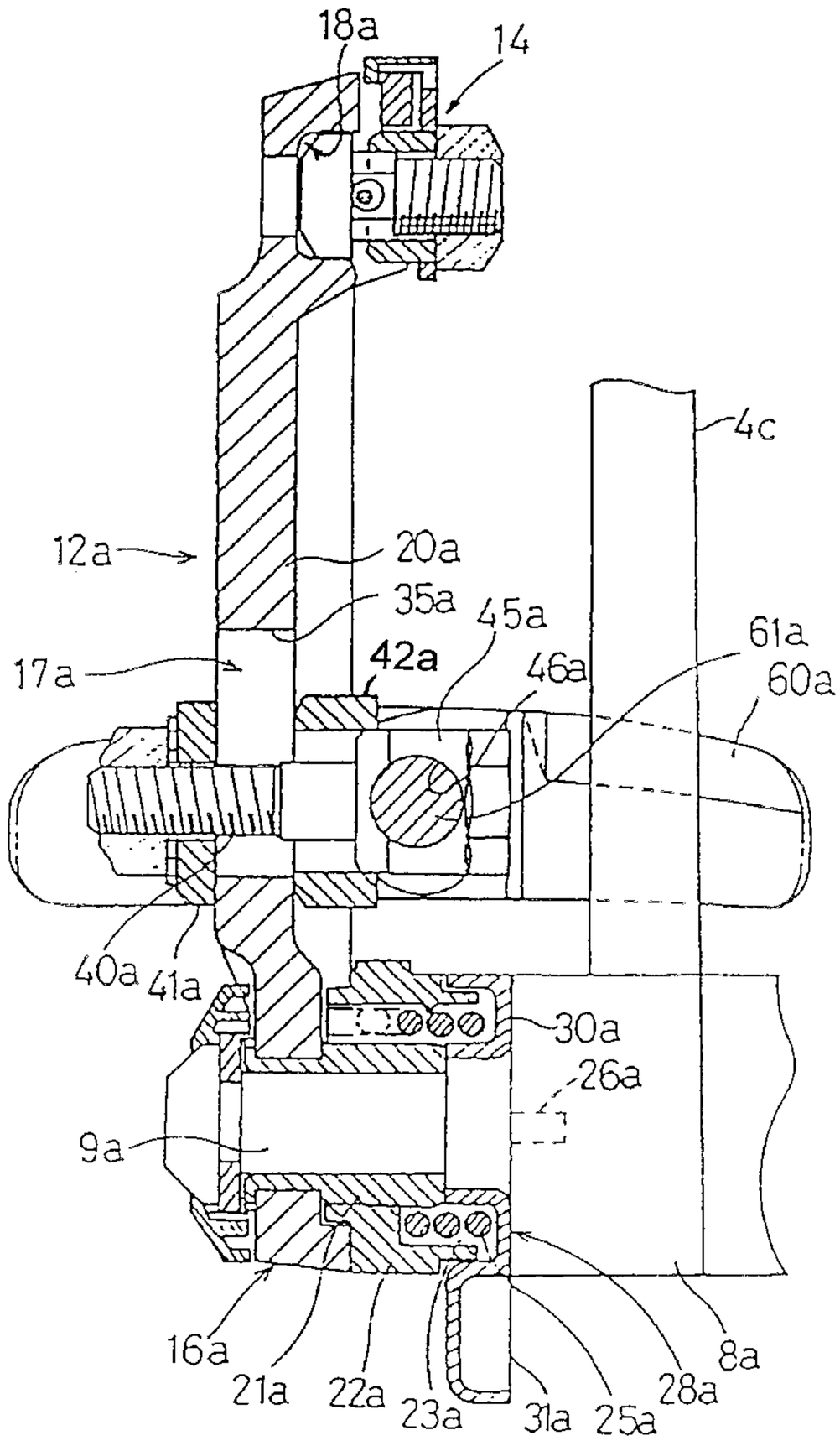


FIG. 1

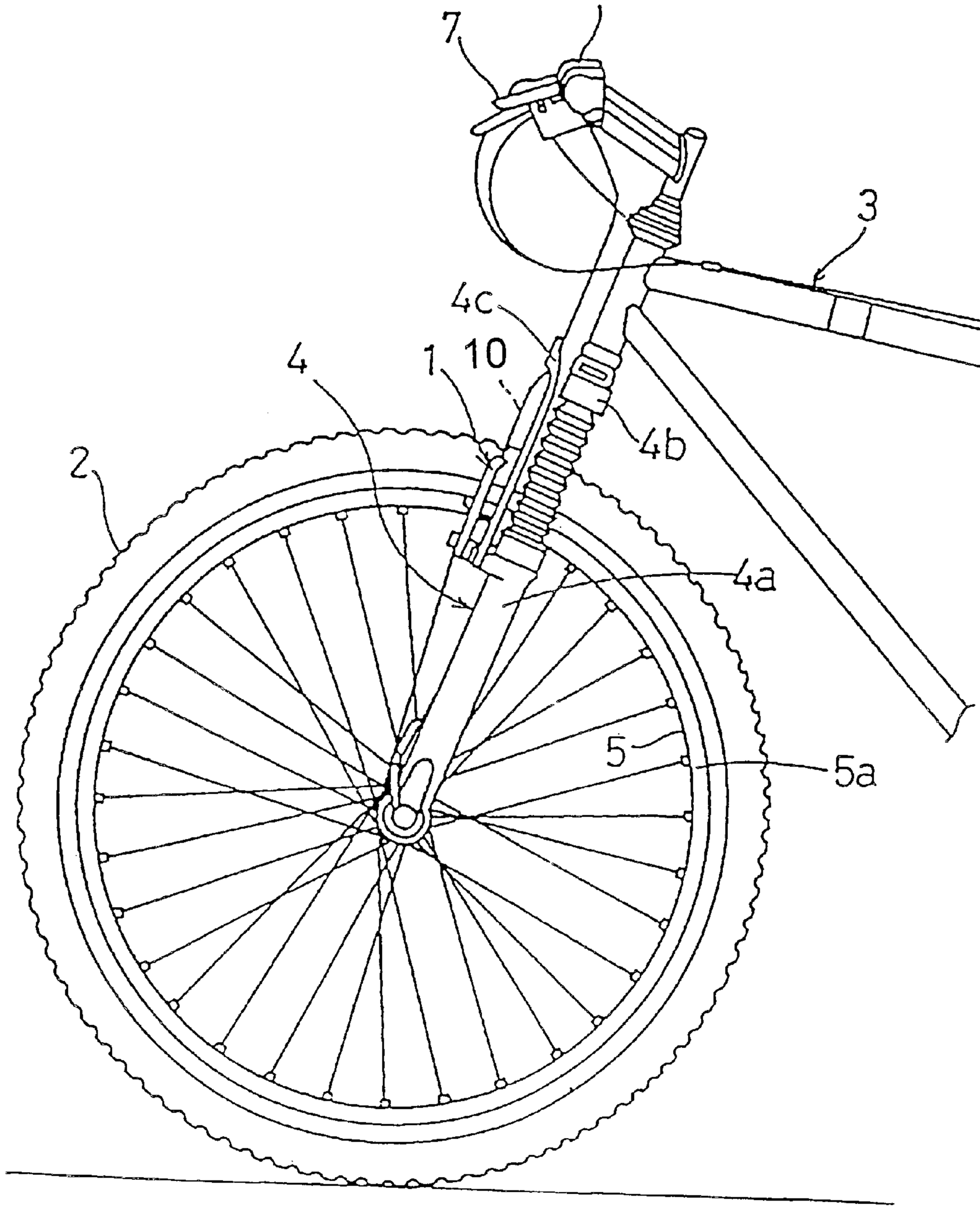
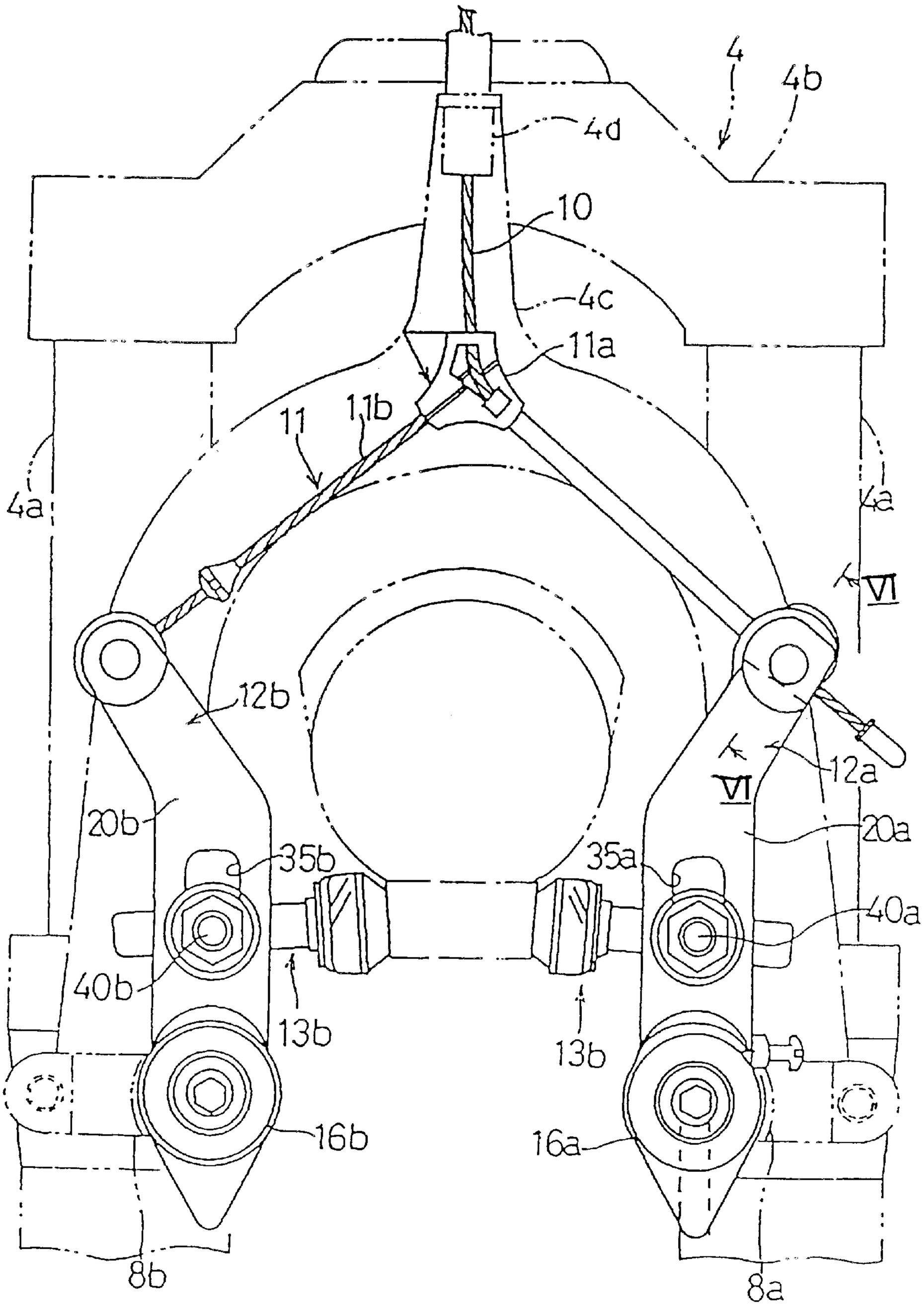


FIG. 2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4c
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40a
40b
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16b
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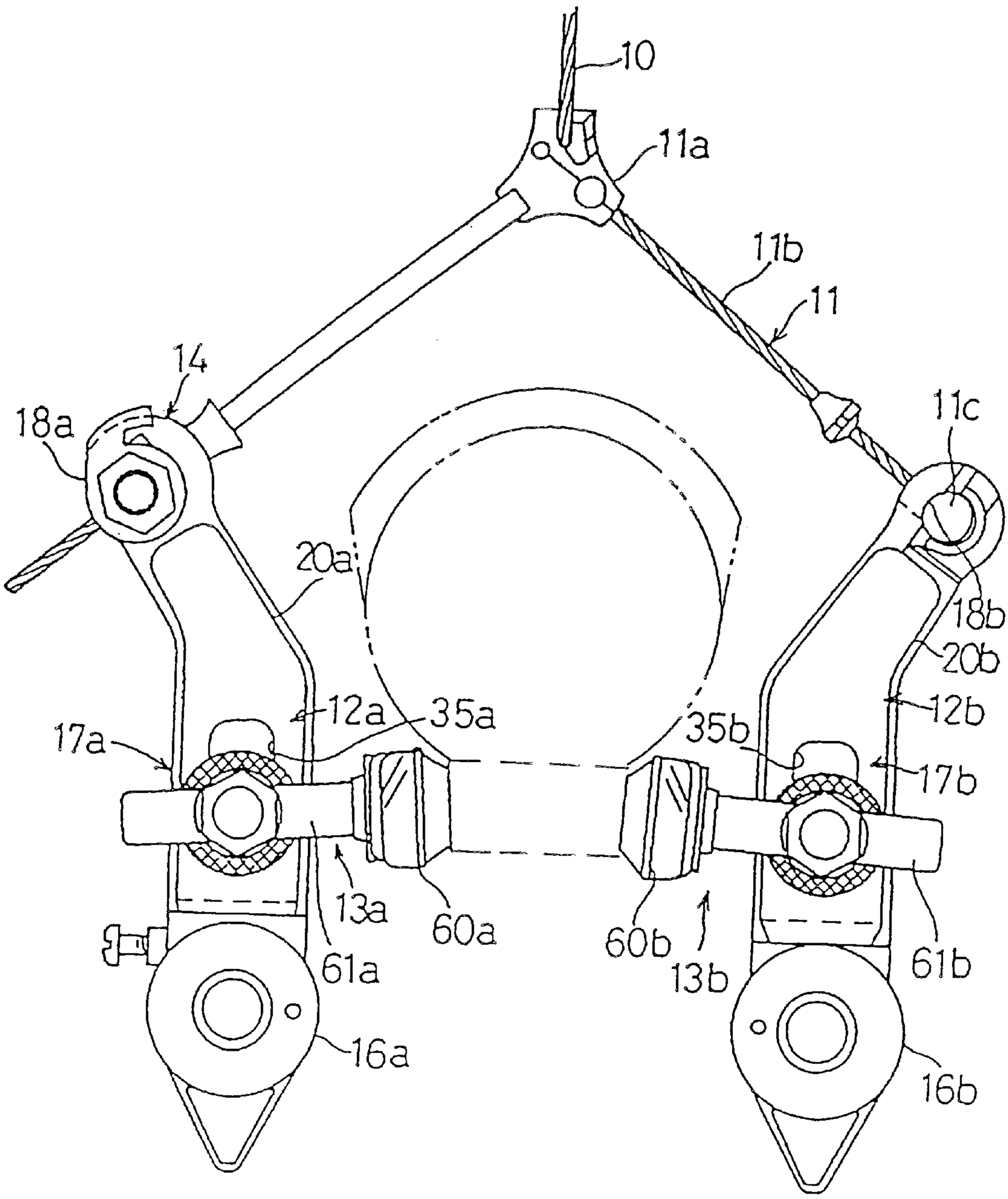
8b
8a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11a
11b
11
14
18a
11c
20a
18b
20b
12a
35a
12b
35b
17a
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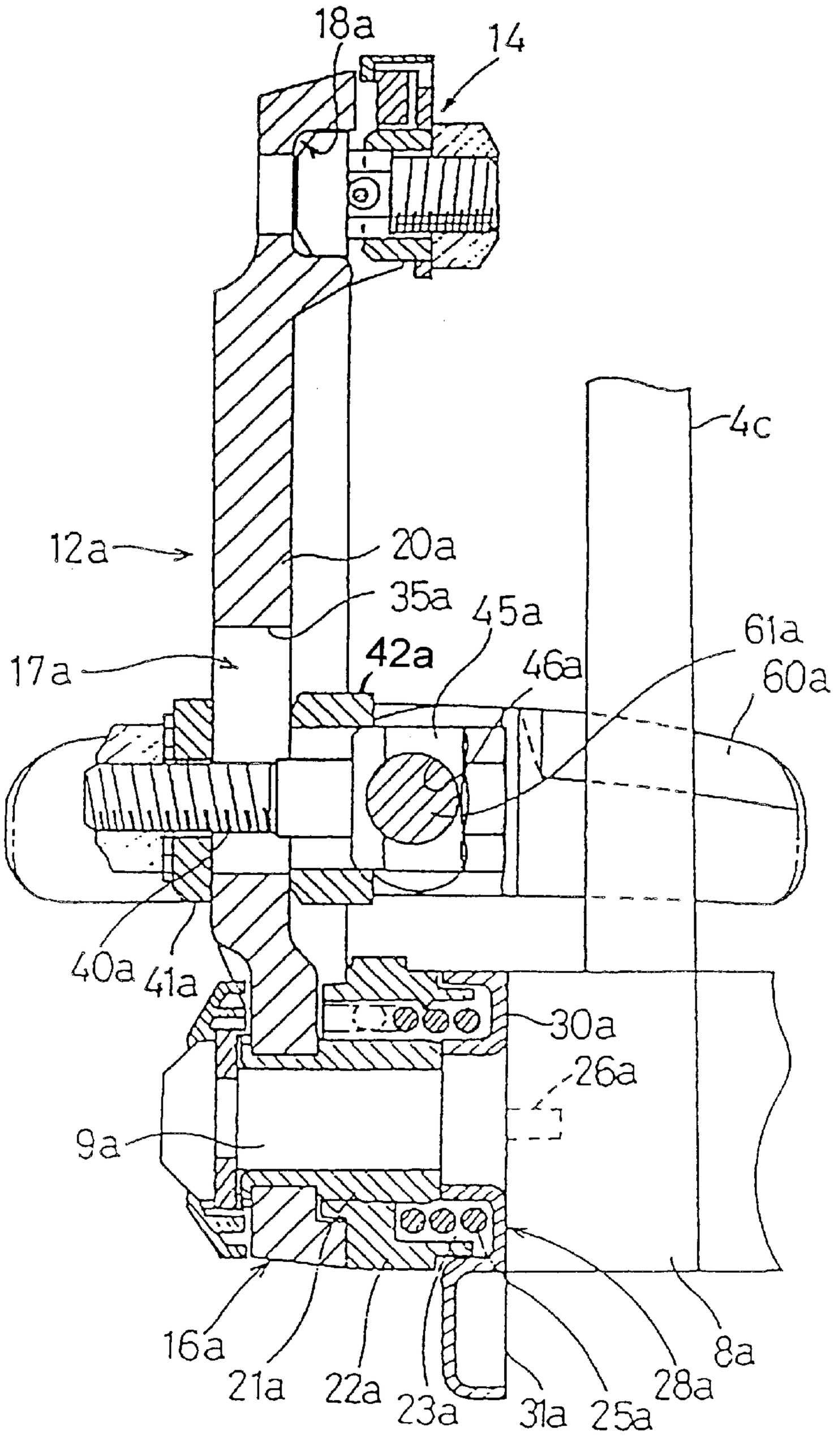
60b
13b
61a
61b
16a
16b

FIG. 3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14
4c
12a
20a
35a
45a
61a
17a
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26a
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16a
21a
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28a
8a

FIG. 4

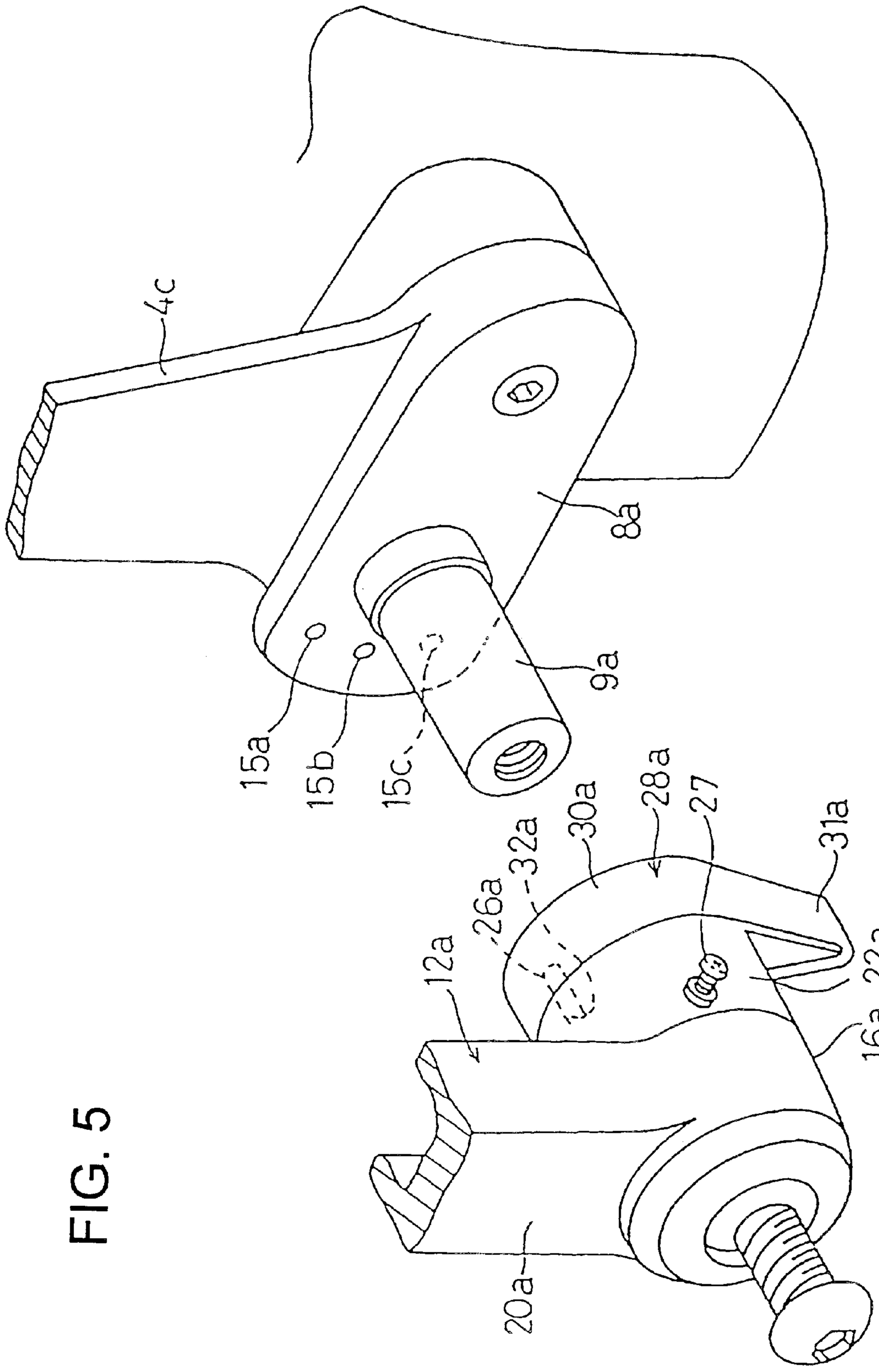


FIG. 5

FIG. 6

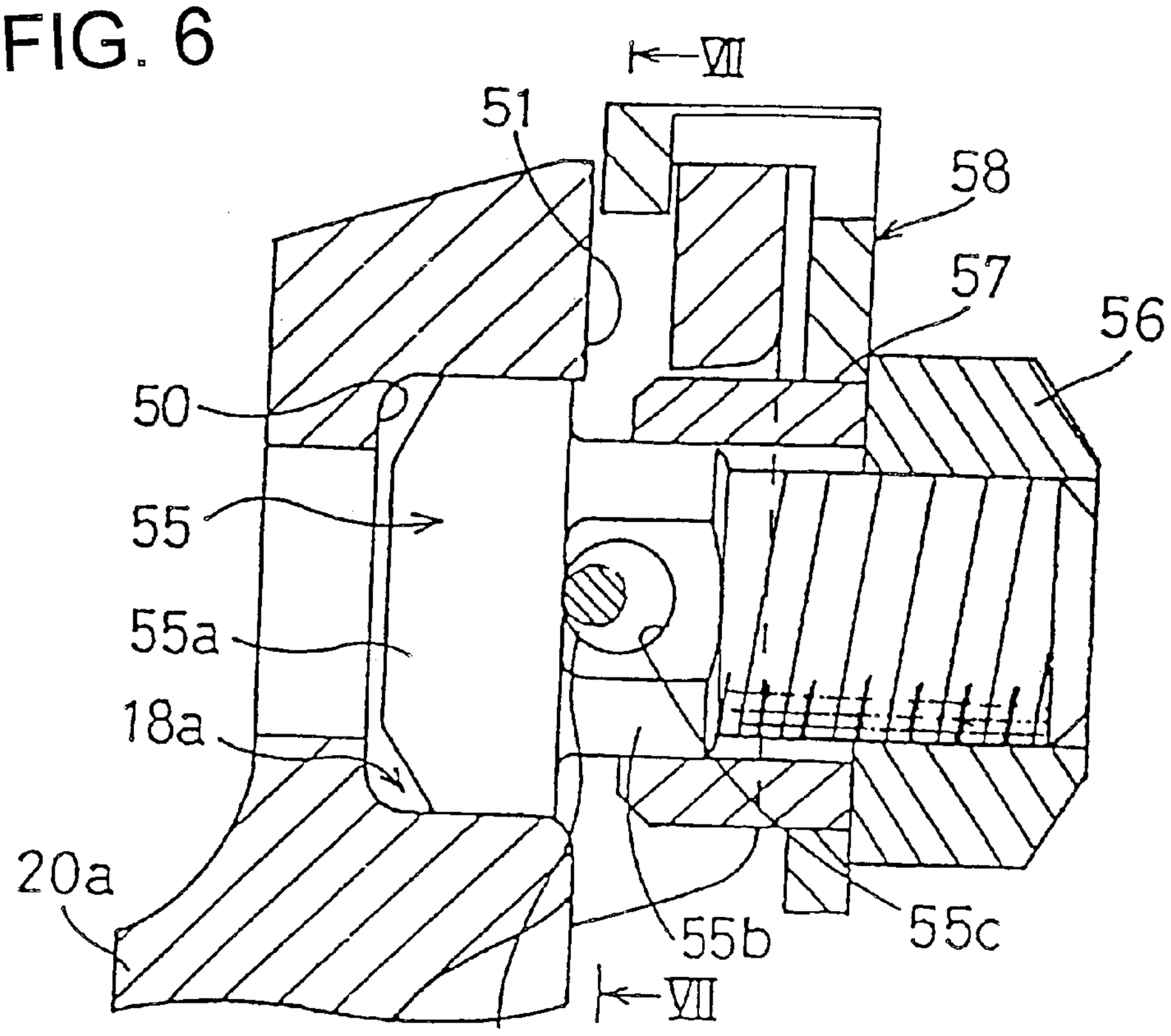
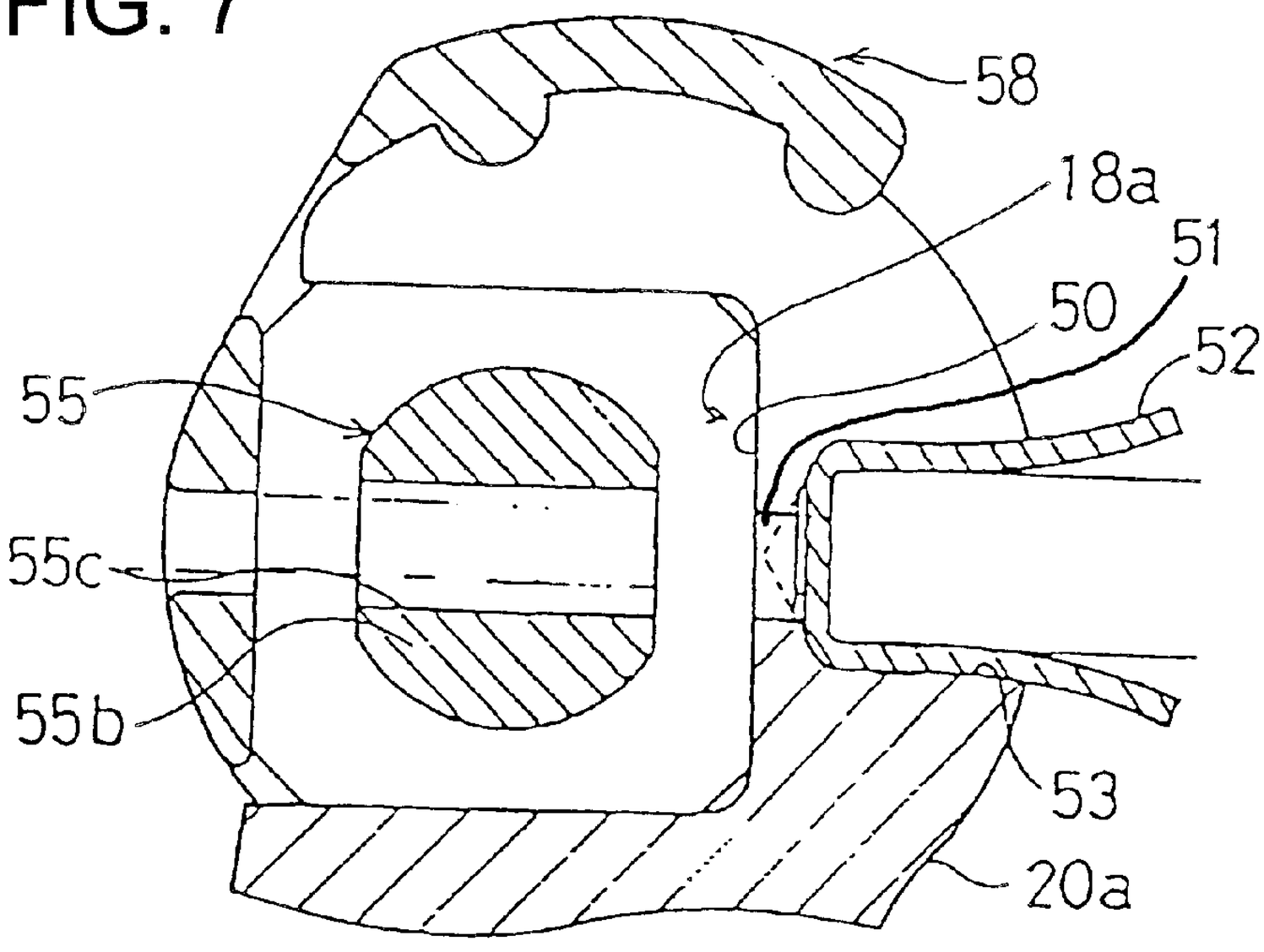

VII
51
58
57
56
50
55
55a
18a
20a
55b
55c
VII

FIG. 7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18a
51
50
52
55
55c
55b
53
20a

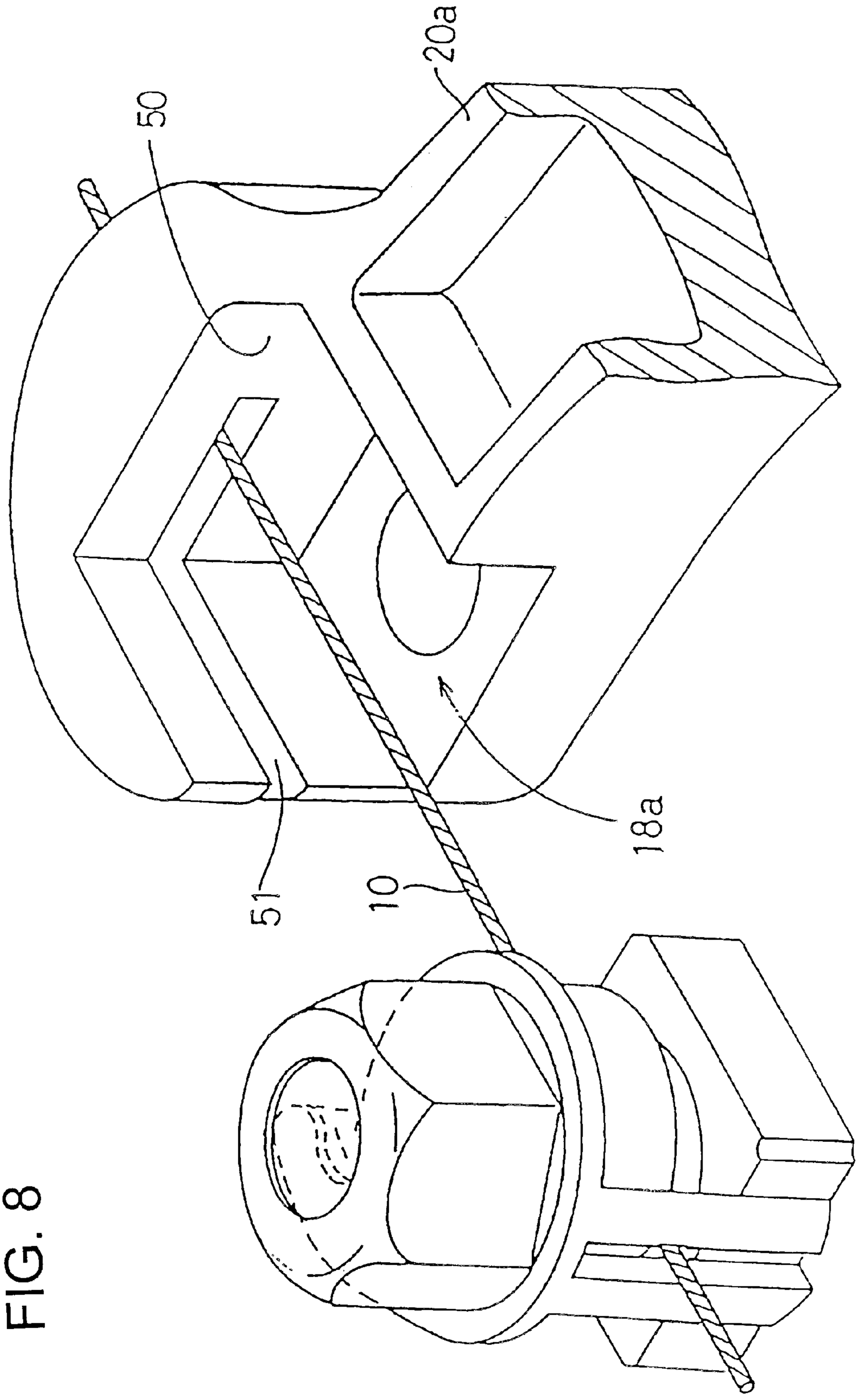

FIG. 8

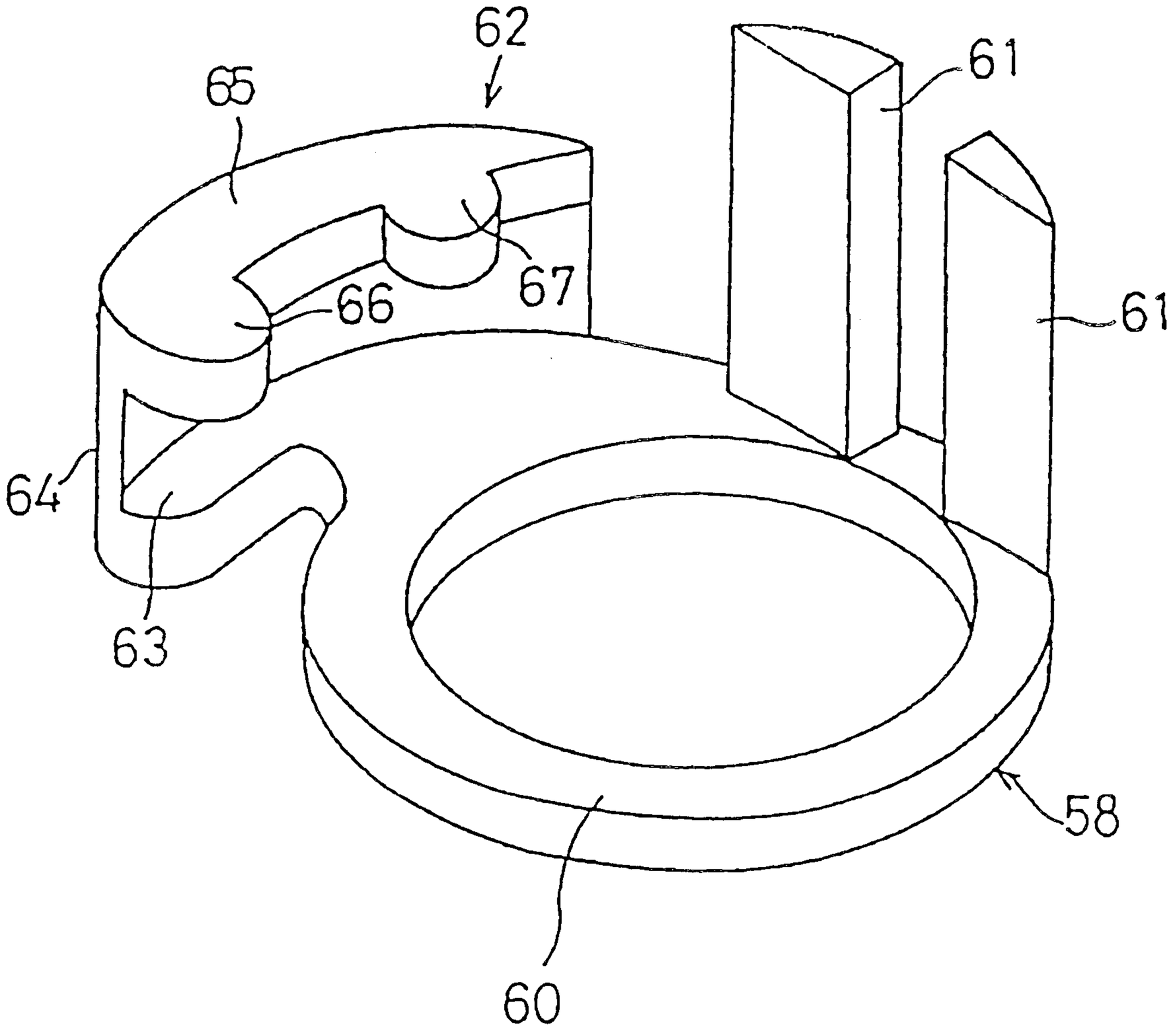

FIG. 9

CANTILEVER BRAKE DEVICE

BACKGROUND OF THE INVENTION

The present invention is directed to cantilever bicycle brake devices.

Bicycles capable of off-road travel, such as MTBs (mountain bikes) are equipped with cantilever brake devices in order to provide strong braking force. Cantilever brake devices straddle both sides of the bicycle rim to provide braking action, and are generally equipped with a pair of left and right brake links and brake shoes attached to the brake links. The brake links are rotatably supported in cantilever fashion on the front and rear forks, and their top ends are connected to cable components which are split into two at their distal ends.

Cable component connection designs include the straddle cable design and the unit link design. In the straddle cable design, a straddle cable is linked through a metal hanger to the distal end of the inner cable, whose basal end is engaged by the brake lever, and both ends of the straddle cable are detachably linked to the brake links. With the straddle cable design, the brakes are adjusted by adjusting the inner cable attachment position using the metal hanger. The difficulty entailed in adjusting the attachment position has gradually led to the adoption of the unit link design.

In the unit link design, the distal end of the inner cable is screwed directly to the distal end of one of the brake links. A branch cable, termed a unit link, is connected at some point along the inner cable, and the distal end of this branch cable is detachably engaged by the other brake link. However, since the unit link design involves screwing one of the brake links to the distal end of the inner cable, when the unit link is disengaged from the other brake link, it sometimes happens that the first brake link does not open sufficiently towards the brake release position if the inner cable is not made sufficiently slack. When this happens, sufficient space between the wheel and the brake shoes is not maintained, and the wheel may come into contact with the brake shoes, making it difficult to remove.

To overcome this problem, one known design provides an anchor member secured to the distal end of the inner cable, wherein the anchor member is detachably engaged at the distal end of one of the brake links. The anchor member principally comprises a screw with a hexagonal hole and a cylindrical nut. A through hole which extends in the diametrical direction is made in the nut, and the inner cable is inserted through this through hole. The inner cable is pressed against the interior of the nut by the screw in order to secure the inner cable to the anchor member.

With the conventional cantilever brake device described above, when the wheel is to be removed from the fork, the unit link and the anchor member are disengaged from the two brake links. This allows the two brake links to be opened towards the brake release position, ensuring that there is sufficient space between the wheel and the break shoes to allow the wheel to be removed with ease. However, during brake adjustment, a wrench, screwdriver, or other tool must be used on the screw and nut while the anchor member is engaged by the brake link, and the length of the inner cable must be adjusted using these tools while manipulating the brake link and the inner cable. Thus, brake adjustment is difficult to perform alone, and is a fairly complicated operation.

SUMMARY OF THE INVENTION

The present invention is directed to a cantilever brake device for a bicycle which facilitates adjustment of the brake

by one person. In one embodiment of the present invention, a brake link for a cantilever brake arm apparatus includes a basal end structured for rotatably supporting the brake link on a bicycle, an intermediate section structured for supporting a brake shoe, and a distal end. An anchor member is structured for attaching a cable thereto, and the distal end of the brake link is structured for detachably and nonrotatably engaging the anchor member. In a more specific embodiment, the anchor member includes a first screw member and a second screw member. The first screw member and the second screw member are structured for fixing the cable to the anchor member when the first screw member and second screw member are screwed together. The first screw member may comprise a bolt having a head section and a shaft section, wherein the distal end of the brake link includes a convex section for nonrotatably receiving the head section of the bolt therein.

The inventive brake link may be incorporated in a complete cantilever brake device. In this case the device includes a cable having a first end connected to a brake lever and first and second second ends. The anchor member of the brake link described above may be connected to the first second end of the cable. A second brake link includes a basal end structured for rotatably supporting the second brake link on the bicycle, an intermediate section structured for supporting a brake shoe, and a distal end for detachably engaging the second second end of the cable. Each brake link includes a biasing means for biasing the brake link laterally outwardly.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a partial side view of a bicycle which incorporates a particular embodiment of a cantilever brake device according to the present invention;

FIG. **2** is a front view of a particular embodiment of a cantilever brake device according to the present invention;

FIG. **3** is a rear view of the brake device shown in FIG. **2**;

FIG. **4** is a side cross sectional view of a particular embodiment of a brake link assembly according to the present invention;

FIG. **5** is a partially exploded view of the lower portion of the brake link assembly shown in FIG. **4**;

FIG. **6** is a cross sectional view of a particular embodiment of an anchor member according to the present invention;

FIG. **7** is a view taken along line VII—VII in FIG. **6**;

FIG. **8** is a view showing the detachable connection between the anchor member and the brake link; and

FIG. **9** is a perspective view of a particular embodiment of a detachment preventing member according to the present invention.

DETAILED DESCRIPTION OF THE EMBODIMENTS

A cantilever brake device **1** pertaining to one embodiment of the present invention, for example, a device for front wheel use, is illustrated in FIGS. **1** and **2**. The brake device **1** is rotatably supported on the front fork **4** of the frame **3**. The front fork **4** comprises, for example, an air/oil system or elastomer system suspension fork capable of absorbing shock from the pavement. The front fork **4** is equipped with a pair of left and right suspension members **4***a*, mounting members **4***b* for mounting the pair of suspension members **4***a*, and a stabilizer **4***c* for reinforcing the suspension members **4***a*. The stabilizer **4***c* is essentially of an inverted

U-shape which splits into two arms. Its bottom ends are affixed at points midway down the suspension members **4***a*, and the top end is equipped with a cable stay **4***d* that retains the outer casing.

A pair of left and right pedestals **8***a* and **8***b* are disposed at the bottom ends of the stabilizer **4***c*. As shown in FIG. **5**, stepped mounting pins **9***a* and **9***b* (only **9***a* is shown) project forward from the pedestals **8***a* and **8***b*. Three engagement holes **15***a*, **15***b*, and **15***c* are made on each pedestal **8***a* and **8***b*, and they are disposed on a circle which is centered on the mounting pin **9***a* (**9***b*) in order to engage a coil spring (described later) which is provided to the brake device **1**.

As shown in FIG. **2** and FIG. **3**, the distal end of the inner cable **10**, whose basal end is linked to a brake lever **7** provided to the handlebar **6**, and the distal end of a branch cable (termed a unit link), which is linked to the inner cable **10** at some point, are linked to the brake device **1**. An anchor fitting **14** is screwed onto the distal end of the inner cable **10**. The branch cable **11** is provided with a branch fitting **11***a* which is movably disposed midway down the inner cable **10**, a cable **11***b* whose basal end is secured to the branch fitting **11***a* by staking, and a cylindrical engagement fitting secured to the distal end of the cable **11***b* by staking.

The brake device **1** is equipped with a pair of left and right brake links **12***a* and **12***b* whose distal ends are detachably linked to the inner cable **10** and the branch cable **11**, respectively, and with brake shoes **13***a* and **13***b* which are mounted facing each other in an adjustable manner midway down the brake links **12***a* and **12***b*. Braking action is provided by bringing brake shoes **13***a* and **13***b* into contact with the side surfaces **5***a* of the rim **5** of the wheel **2**.

As shown in FIG. **2** and FIG. **3**, the brake links **12***a* and **12***b* have plate-shaped link bodies **20***a* and **20***b* which bend outward at the top and which have been lightened at the back surfaces. The basal ends of the link bodies **20***a* and **20***b* are provided with rotatably supported members **16***a* and **16***b* which are rotatably supported on the mounting pins **9***a* and **9***b* which project from the pedestals **8***a* and **8***b*. The mid-sections are provided with shoe mounting members **17***a* and **17***b* for mounting the brake shoes **13***a* and **13***b*. The distal end of the link body **20***a* is equipped with a first engagement member **18***a* which detachably engages the anchor fitting **14**, and the distal end of the link body **20***b* is equipped with a second engagement member **18***b* which detachably engages the engagement fitting **11***c*.

In the following discussion, description of components that are identical for the left and right brake links **12***a* and **12***b* will be described only for the left side (the right side in FIG. **2**).

As shown in FIG. **4**, the rotatably supported member **16***a* is provided with a cylindrical bushing **21***a* that fits over the mounting pin **9***a* which has been staked to the basal end of the link body **20***a*, and with a bottomed cylindrical spring cover **22***a* that is mounted around the outside surface of the bushing **21***a*. A cylindrical gap **23***a* is formed between the spring cover **22***a* and the bushing **21***a*. Gap **23***a* houses a coil spring **25***a* that energizes the brake link **12***a* towards the brake release position. As shown in FIG. **5**, the back end **26***a* of the coil spring **25***a* is engaged by one of the engagement holes **15***a*, **15***b*, and **15***c* that have been made in the pedestal **8***a*. By varying the engagement position among the engagement holes **15***a*, **15***b*, or **15***c*, it is possible to adjust the strength of the force towards the brake release position between three different levels. The front end of the coil spring (not shown) is engaged by the bottom of the spring cover **22***a*. The engagement position of the front end of the coil spring **25***a* on the brake link side **12***a* can be moved in the circumferential direction of the mounting pin by means of a spring adjustment screw **27** which screws into the outside wall of the spring cover **22***a*.

A spring cap **28***a* which covers the back end of the coil spring **25***a* is rotatably mounted on the back of the spring cover **22***a*. The spring cap **28***a* is provided with a cylindrical section **30***a* which fits over the large-diameter section of the mounting pin **9***a*, and with a rotation control member **31***a* of triangular form which projects outward from the peripheral surface of the cylindrical section **30***a*. The bottom of the spring cover **22***a* is provided with a through-hole **32***a* (FIG. **5**) through which the back end **26***a* of the coil spring **25***a* passes, whereby the coil spring **25***a* may be engaged.

The provision of a spring cap **28***a* of this design allows the back end **26***a* of the coil spring **25***a* to be set to any desired position simply by rotating the spring cap **28***a*. Thus, even where the rotation of the brake link **12***a* is restricted, preventing the back end **26***a* of the coil spring **25***a* from being inserted into desired engagement hole **15***a*–**15***c* in the natural state, the back end **26***a* can be inserted easily into desired engagement hole **15***a*–**15***c* simply by rotating the spring cap **28***a*. The spring cap **28***a* mounting angle (orientation of the distal end of the spring cap **28***a*) changes depending on the engagement hole **15***a*–**15***c* in which the coil spring **25***a* is engaged, so the engagement position of the coil spring **25***a*, that is, the strength of the force towards the brake release position, can be readily determined from the orientation of the spring cap **28***a*. For example, when the coil spring **25***a* is engaged by the engagement hole **15***b*, the distal end of spring cap **28***a* faces downward. When the coil spring **25***a* is engaged by the engagement hole **15***a*, the distal end faces diagonally inward. When the coil spring is engaged by the engagement hole **15***c*, the distal end faces diagonally outward. Thus, the strength of the force towards the brake release position can be readily determined from the orientation of the spring cap **28***a*.

As shown in FIG. **2** through FIG. **4**, the shoe mounting member **17***a* is provided with a shoe mounting bolt **40***a* which is inserted from the back end of a slot **35***a* made in the central section of the link body **20***a*, a washer **41***a* which fits over the shoe mounting bolt **40***a* so as to sandwich the link body **20***a*, and a collar **42***a*. The head **45***a* of the shoe mounting bolt **40***a*, which is located at the back side of the link body **20***a*, has a shoe mounting hole **46***a* which extends in the lateral direction (perpendicular to the plane of the paper in FIG. **4**).

As shown in FIG. **3** and FIG. **4**, the brake shoe **13***a* is provided with a rubber shoe body **60***a* and with a shoe mounting pin **61***a* which projects outward from the approximate center of the shoe body **60***a* in the lengthwise direction. The shoe body **60***a* is thinner than conventional products and does not readily deform during braking. The shoe mounting pin **61***a* fits through a shoe mounting hole **46***a* provided in the shoe mounting bolt **40***a*.

The brake shoe **13***a* is disposed on the front fork **4** side of the brake link **12***a*, so the distance from the front fork **4** is shorter, and the moment produced by reaction force from the rim acting on the brake shoe **13***a* is lower. Thus, a decline in breaking force due to torsion of the fork does not result even when a suspension fork with relatively low torsional rigidity is used. Since the shoe body **60***a* itself is thin, flexural deformation of the shoe body **60***a* during braking is minimized, in turn minimizing the decline in braking force.

As shown in FIG. **6** through FIG. **8**, the first engagement member **118***a* has a convex section **50** comprising a square

hole formed at the distal end of the link body **20***a*. The convex section **50** opens laterally outward (as defined in FIGS. **2** and **3**) towards the brake release position. A cable groove **51**, through which the inner cable **10** is passed, is formed at the distal end of the link body **20***a*. Cable groove **51** is located further to the inside and above the convex section **50**. In this embodiment, the side of the cable groove **51** from which the cable enters is provided with a mounting hole **53** for mounting a protective tube **52** in order to prevent the inner cable **10** from being severed when it is bent.

The anchor fitting **14** is provided with an anchor bolt **55** which is engaged by the convex section **50** in a nonrotatable manner, an anchor nut **56** which screws onto the anchor bolt **55**, an anchor collar **57** which fits over the anchor bolt **55**, and a detachment prevention member **58** for preventing the anchor fitting **14** from becoming detached from the first engagement member **18***a*. In this embodiment, the head **55***a* of the anchor bolt **55** is square so that it may be engaged by the convex section **50** of the first engagement member **18***a* in a nonrotatable manner. The shaft section of the anchor bolt **55** is double chamfered on the base end, and a cable hole **55***c* through which the inner cable **10** passes is formed in the direction of the diameter. The anchor collar **57** is a component which presses the inner cable **10** against the cable hole **55***c* when the anchor nut **56** is tightened in order to anchor the inner cable **10** within the anchor fitting **14**.

The detachment prevention member **58** is a component fabricated from a synthetic resin, and it fits around the exterior of the anchor collar **57**. As shown in FIG. **9**, detachment prevention member **58** is provided with a ring member **60**, a pair of rotation preventing members **61** and **61** which project upward from the ring member **60** in FIG. **9**, and an engagement member **62** which projects outward from the ring member **60** and which is engaged by the distal end of the link body **20***a*. The ring member **60** fits around the outside of the anchor collar **57**. When the ring member **60** is fitted around the anchor collar **57**, the rotation preventing members **61** and **61** contact the head **55***a* of the anchor bolt **55** and prevent the detachment prevention member **58** from rotating. The engagement member **62** is provided with a projecting member **63** which projects outward from the ring member **60** in a tangential direction, a clip member **65**, disposed at the distal end of the projecting member **63** and provided with a pair of tongue members **66** and **67** disposed at intervals along its inside edge, and a connecting member **64** which connects the projecting member **63** and the clip member **65**. When the detachment prevention member **58** has been fitted around the anchor collar **57**, its engagement member **62** fits over the link body **20***a* to the rear of the cable groove **51** so that the anchor fitting **14** is prevented from becoming detached from the first engagement member **18***a* even when the inner cable **10** is not tensed. Since the anchor fitting **14** is detachable from the first engagement member **18***a*, the brake link **12***a* can be opened reliably with being affected by the inner cable **10**, even in a unit link design.

When brake adjustment is to be performed on a brake device **1** constituted in this way, the anchor nut **56** of the anchor fitting **14** is loosened, releasing the end of the anchored inner cable **10**. Holding the brake link **12***a* in the proper position, the anchor nut **56** is turned to perform brake adjustment. Since the anchor bolt **55** is prevented from turning, it is unnecessary to hold the anchor bolt **55** using a tool. Thus, brake adjustment can be performed easily by one person, and the gaps between the rim and the brake shoes can be appropriately maintained. Of course, where the bicycle manufacturer has set the anchor position of the anchor fitting **14** with respect to the inner cable **10** at the factory, optimal brake adjustment can be accomplished subsequently simply by anchoring the anchor fitting **14** in this position.

When the wheel **2** is to be attached or detached, the brake links **12***a* and **12***b* are held closed while disengaging the anchor fitting **14** from the first engagement member **18***a* of the brake link **12***a* and disengaging the engagement fitting **11***c* from the second engagement member **18***b* of the brake link **12***b*. As a result, the two brake links **12***a* and **12***b* are energized towards the brake release position (laterally outward) by the coil springs **25***a* and **25***b*. The brake shoes **13***a* and **13***b* open until the shoe bodies **60***a* and **60***b* come into contact with the stabilizer **4***c*. Since the brake line **12***a* on the side to which the inner cable **10** is linked opens reliably, the front wheel **2** can be attached or detached with ease.

When installing the brake device on the mounting pins **9***a* and **9***b*, the rotatably supported members **16***a* and **16***b* are mounted onto the mounting pins **9***a* and **9***b*, and the rotation control member **31** is grasped with the fingers to position the back ends **26***a* and **26***b* of the coil springs **25***a* and **25***b* into any one of the desired engagement holes **15***a*–**15***c*. In this state, pushing the rotatably supported members **16***a* and **16***b* are further back causes the back ends **26***a* and **26***b* to enter the selected engagement hole **15***a*–**15***c*.

Since the brake shoes **13***a* and **13***b* are disposed on the front fork **4** side of the brake links **12***a* and **12***b* in order to maintain strong braking force, the back edges of the shoe bodies **60***a* and **60***b* come into contact with the stabilizer **4***c*, thereby restricting rotation of the brake links **12***a* and **12***b* towards the brake release position. However, since the engagement positions of the back ends **26***a* and **26***b* of the coil springs **25***a* and **25***b* can be freely changed using the rotation control members **31***a* and **31***b*, the ends of the coil springs **25***a* and **25***b* can be reliably inserted into the desired engagement holes **15***a*–**15***c* even where the rotation of the brake links **12***a* and **12***b* is restricted.

While the above is a description of various embodiments of the present invention, further modifications may be employed without departing from the spirit and scope of the present invention. For example, the present invention may be implemented in the rear brake instead of the front brake, and the present invention may be implemented in a brake device of straddle cable design rather than of unit link design. The method for engaging the anchor fitting in a nonrotatable manner is no limited to that shown in the embodiment.

Thus, the scope of the invention should not be limited by the specific structures disclosed. Instead, the true scope of the invention should be determined by the following claims. Of course, although labeling symbols are used in the claims in order to facilitate reference to the figures, the present invention is not intended to be limited to the constructions in the appended figures by such labeling.

What is claimed is:

1. A cantilever brake arm apparatus comprising:

a brake link (**12***a*) including:

a basal end (**16***a*) structured for rotatably supporting the brake link (**12***a*) on a bicycle;

an intermediate section (**17***a*) structured for supporting a brake shoe (**13***a*); and

a distal end (**18***a*);

an anchor member (**14**) structured for attaching a cable (**10**) thereto;

wherein the distal end (**18***a*) of the brake link (**12***a*) is structured for detachably and nonrotatably engaging the anchor member (**14**); and

wherein the anchor member (**14**) comprises:

a first anchor component (**55**);

a second anchor component (**56**) fixed to the first anchor component (**55**); and

wherein the first anchor component (**55**) and the second anchor component (**56**) remain fixed together when the anchor member (**14**) is detached from the brake link (**12***a*).

2. The apparatus according to claim **1** wherein the anchor member (**14**) comprises:

a first screw member (**55**);

a second screw member (**56**) for threadingly engaging the first screw member (**55**); and

wherein the first screw member (**55**) and the second screw member (**56**) are structured for fixing the cable (**10**) to the anchor member (**14**) when the first screw member (**55**) and second screw member (**56**) are screwed together.

3. The apparatus according to claim **2** wherein the first screw member (**55**) comprises a bolt having a head section (**55***a*) and a shaft section (**55***b*), and wherein the distal end (**18***a*) of the brake link (**12***a*) includes a convex section (**50**) for nonrotatably receiving the head section (**55***a*) of the bolt therein.

4. The apparatus according to claim **3** wherein the convex section (**50**) is noncircular.

5. The apparatus according to claim **4** wherein the convex section (**50**) has a substantially square shape.

6. The apparatus according to claim **4** wherein the convex section (**50**) opens laterally outwardly.

7. The apparatus according to claim **4** further comprising a sleeve (**57**) fitted over the shaft section (**55***b*) of the bolt;

wherein the shaft section (**55***b*) of the bolt includes an opening (**55***c*) therethrough for receiving the cable (**10**) therein; and

wherein the second screw member (**56**) comprises a nut which screws to the shaft section (**55***b*) of the bolt (**55**) for pressing the sleeve (**57**) against the cable (**10**).

8. The apparatus according to claim **3** further comprising a detachment prevention member (**58**) coupled to the anchor member (**14**) and frictionally engaging the distal end (**18***a*) of the brake link (**12***a*) for inhibiting detachment of the anchor member (**14**) from the distal end (**18***a*) of the brake link (**12***a*).

9. The apparatus according to claim **8** wherein the detachment prevention member (**58**) includes an engagement member (**62**) for frictionally engaging at least three sides of the distal end (**18***a*) of the brake link (**12***a*).

10. The apparatus according to claim **9** wherein the distal end (**18***a*) of the brake link (**12***a*) includes a cable groove (**51**) opening towards a top portion of the distal end (**18***a*) of the brake link (**12***a*), and wherein the engagement member (**62**) extends around the top portion and into the cable groove (**51**).

11. A cantilever brake apparatus for a bicycle comprising:

a cable (**10,11**) having a first end connected to a brake lever (**7**) and first and second second ends;

a first brake link (**12***a*) including:

a first basal end (**16***a*) structured for rotatably supporting the first brake link (**12***a*) on the bicycle;

a first intermediate section (**17***a*) structured for supporting a first brake shoe (**13***a*): and

a first distal end (**18***a*);

an anchor member (**14**) structured for attaching the first second end of the cable (**10,11**) thereto;

wherein the first distal end (**18***a*) of the first brake link (**12***a*) is structured for detachably and nonrotatably engaging the anchor member (**14**);

first biasing means (**25***a*) for biasing the first brake link (**12***a*) laterally outwardly;

a second brake link (**12***b*) including:

a second basal end (**16***b*) structured for rotatably supporting the second brake link (**12***a*) on the bicycle;

a second intermediate section (**17***b*) structured for supporting a second brake shoe (**13***b*); and

a second distal end (**18***b*) for detachably engaging the second second end of the cable (**10,11**);

second biasing means (**25***b*) for biasing the second brake link (**12***b*) laterally outwardly; and

wherein the anchor member (**14**) comprises:

a first anchor component (**55**);

a second anchor component (**56**) fixed to the first anchor component (**55**); and

wherein the first anchor component (**55**) and the second anchor component (**56**) remain fixed together and to the first second end of the cable (**10,11**) when the anchor member (**14**) is detached from the brake link (**12***a*).

12. The apparatus according to claim **11** wherein the anchor member (**14**) comprises:

a first screw member (**55**);

a second screw member (**56**) for threadingly engaging the first screw member (**55**); and

wherein the first screw member (**55**) and the second screw member (**56**) are structured for fixing the first second end of the cable (**10,11**) to the anchor member (**14**) when the first screw member (**55**) and second screw member (**56**) are screwed together.

13. The apparatus according to claim **12** wherein the first screw member (**55**) comprises a bolt having a head section (**55***a*) and a shaft section (**55***b*), and wherein the first distal end (**18***a*) of the first brake link (**12***a*) includes a convex section (**50**) for nonrotatably receiving the head section (**55***a*) of the bolt therein.

14. The apparatus according to claim **13** wherein the convex section (**50**) is noncircular.

15. The apparatus according to claim **14** wherein the convex section (**50**) has a substantially square shape.

16. The apparatus according to claim **14** wherein the convex section (**50**) opens laterally outwardly.

17. The apparatus according to claim **14** further comprising a sleeve (**57**) fitted over the shaft section (**55***b*) of the bolt;

wherein the shaft section (**55***b*) of the bolt includes an opening (**55***c*) therethrough for receiving the first second end of the cable (**10,11**) therein; and

wherein the second screw member (**56**) comprises a nut which screws to the shaft section (**55***b*) of the bolt (**55**) for pressing the sleeve (**57**) against the cable (**10**).

18. The apparatus according to claim **13** further comprising a detachment prevention member (**58**) coupled to the anchor member (**14**) and frictionally engaging the first distal end (**18***a*) of the first brake link (**12***a*) for inhibiting detachment of the anchor member (**14**) from the first distal end (**18***a*) of the first brake link (**12***a*).

19. The apparatus according to claim **18** wherein the detachment prevention member (**58**) includes an engagement member (**62**) for frictionally engaging at least three sides of the first distal end (**18***a*) of the first brake link (**12***a*).

20. The apparatus according to claim **19** wherein the first distal end (**18***a*) of the first brake link (**12***a*) includes a cable groove (**51**) opening towards a top portion of the first distal end (**18***a*) of the first brake link (**12***a*), and wherein the engagement member (**62**) extends around the top portion and into the cable groove (**51**).

21. The apparatus according to claim **13** wherein the cable (**10**,**11**) comprises:

a main cable (**10**) having a first end connected to the brake lever (**7**) and a second end connected to the anchor member (**14**); and

a branch cable (**11**) having a first end connected to the main cable (**10**) and a second end detachably engaged by the second distal end (**18***b*) of the second brake link (**12***b*).

22. A cantilever brake arm apparatus comprising:

a brake link (**12***a*) including:

a basal end (**16***a*) structured for rotatably supporting the brake link (**12***a*) on a bicycle;

an intermediate section (**17***a*) structured for supporting a brake shoe (**13***a*); and

a distal end (**18***a*);

an anchor member (**14**) structured for attaching a cable (**10**) thereto;

wherein the distal end (**18***a*) of the brake link (**12***a*) is structured for detachably and nonrotatably engaging the anchor member (**14**);

a detachment prevention member (**58**) coupled to the anchor member (**14**) and frictionally engaging the distal end (**18***a*) of the brake link (**12***a*) for inhibiting detachment of the anchor member (**14**) from the distal end (**18***a*) of the brake link (**12***a*); and

wherein the detachment prevention member (**58**) includes an engagement member (**62**) for frictionally engaging at least three sides of the distal end (**18***a*) of the brake link (**12***a*).

23. The apparatus according to claim **22** wherein the distal end (**18***a*) of the brake link (**12***a*) includes a cable groove (**51**) opening towards a top portion of the distal end (**18***a*) of the brake link (**12***a*), and wherein the engagement member (**62**) extends around the top portion and into the cable groove (**51**).

24. A cantilever brake apparatus for a bicycle comprising:

a cable (**10**,**11**) having a first end connected to a brake lever (**7**) and first and second second ends;

a first brake link (**12***a*) including:

a first basal end (**16***a*) structured for rotatably supporting the first brake link (**12***a*) on the bicycle;

a first intermediate section (**17***a*) structured for supporting a first brake shoe (**13***a*); and

a first distal end (**18***a*);

an anchor member (**14**) structured for attaching the first second end of the cable (**10**,**11**) thereto;

wherein the first distal end (**18***a*) of the first brake link (**12***a*) is structured for detachably and nonrotatably engaging the anchor member (**14**);

first biasing means (**25***a*) for biasing the first brake link (**12***a*) laterally outwardly;

a second brake link (**12***b*) including:

a second basal end (**16***b*) structured for rotatably supporting the second brake link (**12***a*) on the bicycle;

a second intermediate section (**17***b*) structured for supporting a second brake shoe (**13***b*); and

a second distal end (**18***b*) for detachably engaging the second second end of the cable (**10**,**11**); and

second biasing means (**25***b*) for biasing the second brake link (**12***b*) laterally outwardly;

a detachment prevention member (**58**) coupled to the anchor member (**14**) and frictionally engaging the first distal end (**18***a*) of the first brake link (**12***a*) for inhibiting detachment of the anchor member (**14**) from the first distal end (**18***a*) of the first brake link (**12***a*); and

wherein the detachment prevention member (**58**) includes an engagement member (**62**) for frictionally engaging at least three sides of the first distal end (**18***a*) of the first brake link (**12***a*).

25. The apparatus according to claim **24** wherein the first distal end (**18***a*) of the first brake link (**12***a*) includes a cable groove (**51**) opening towards a top portion of the first distal end (**18***a*) of the first brake link (**12***a*), and wherein the engagement member (**62**) extends around the top portion and into the cable groove (**51**).

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